

Notice of Allowability

Application No.

10/526,209

Examiner

Ling-Siu Choi

Applicant(s)

LINDROOS ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/25/2006.
2. ☒ The allowed claim(s) is/are 1-9,13-15 and 18.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. This Office Action is in response to the Amendment and Response to Final Office Action filed August 25, 2005. Claims 10-12, 16-17, and 19 were canceled and claims 1-9, 13-15, and 18 are now pending.

Allowable Subject Matter

2. Claims 1-9, 13-15, and 18 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Ernst et al. (US 5,932,514), Fischer et al. [Makromol. Chem., Macromol. Symp. **66**, 191-202(1993)], Brady III et al. (EP 0 630 910 A1), Canich et al. (WO 93/13140), Goode et al. (WO 98/20045), Nagy et al. (US 6,025,407), and Rosch (US 5,908,903).

| | | |
|--|--|---------|
| A process to prepare an unsupported catalyst, comprising | | Claim 1 |
| A | reacting an aluminoxane and a Lewis base in an optionally halogenated hydrocarbon solvent <u>to form a particulate suspensipon</u> | |
| B | reacting the suspension with a metallocene complex in an optionally halogenated hydrocarbon solvent | |
| C | <u>isolating the unsupported olefin polymerization catalyst</u> | |
| wherein the Lewis base is aliphatic or aromatic amine, ether, phenol, benzyl alcohol, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide, or a mixture thereof | | |

Ernst et al. disclose a process to prepare a catalyst for olefin polymerization, comprising the steps of (a) drying a hydrophilic inorganic oxide, (b) reacting the free hydroxyl groups of the oxide completely or partially with aluminoxane in toluene, (c) subsequently reacting the modified oxide with a polyfunctional organic crosslinker, and (d) further contacting with a metallocene, wherein the polyfunctional organic crosslinker can be ethylene glycol, 1,4-butanediol diglycidyl ether, triethanolamine, or glycerol (abstract; col. 3, lines 21-36; col. 4, lines 24-45; Example 1). However, Ernst et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Fischer et al. disclose a process to prepare a catalyst for olefin polymereization, comprising (a) contacting 2,6-ditertbutyl-4-methyl phenol (BHT) and 2,2,6,6-tetramethylpiperidine (TMP) with methylaluminoxane (MAO) and then (b) contacting with a zirconocene in toluene (abstract; page 193, lines 5-7). However, Fischer et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Brady III et al. disclose a catalyst for olefin polymerization, comprising a metallocene, aluminoxane, and a Lewis Base, wherein the Lewis base is ether, alcohol [ethylene glycol, phenol], or amine (page 7, lines 30-33; claims 1-2). However, Brady III et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the

contact of an aluminoxane and a Lewis base.

Canich et al. disclose a catalyst system comprising a monocyclopentadienyl Group IVB transition metal compound, an alumoxane, and a modifier, wherein the modifier is a Lewis base comprising ethylamine, diethylamine dimethylaniline, ethanol, and phenol (abstract; page 19, lines 23-36). However, Canich et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Goode et al. disclose an unsupported, liquid form catalyst composition comprising a single site catalyst, an activating cocatalyst, and an antifouling agent, wherein the antifouling agent includes ether, alcohol [ethylene glycol or phenol], and amine (abstract; pages 18-21). However, Goode et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Nagy et al. disclose a catalyst for olefin polymerization, comprising a metallocene, an aluminum-containing cocatalyst, and a Lewis base, wherein the aluminum-containing cocatalyst is alkyl aluminoxane and the Lewis base includes ether and amine (abstract; col. 7, lines 59-67; col. 8, lines 1-67). However, Nagy et al. do not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

Rosch discloses a catalyst for olefin polymerization, comprising (A) a

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metallocene complex of the metals of the fourth, fifth, or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions, and (C) a sterically hindered, organic Lewis base, wherein the compound forming metallocenium ions includes methyl aluminoxane and the sterically hindered, organic Lewis base includes amine (abstract; col. 6, lines 61-63; col. 7, lines 23-30). However, Rosch does not teach or fairly suggest a process to prepare and isolate an unsupported olefin polymerization catalyst comprising forming a particulate suspension from the contact of an aluminoxane and a Lewis base.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

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LING-SUI CHOI
PRIMARY EXAMINER

September 12, 2006